

WHAT IS CLAIMED IS

1. A white light emitting organic electroluminescent (EL) device, comprising:

a substrate;

an anode formed on said substrate;

at least one hole transporting layer formed on said anode;

at least one luminescent layer formed on said hole transporting layer, wherein a first dopant is doped into said luminescent layer;

at least one electron transporting layer formed on said luminescent layer, wherein a second dopant is doped into said electron transporting layer; and

a cathode formed on said electron transporting layer;

wherein a first light is emitted by said first dopant, a second light is emitted by said second dopant, and a third light is emitted by said luminescent layer when the device is applied with a bias voltage.

2. The organic EL device as recited in claim 1, wherein the luminescence intensity of said second light and said third light is proportional to the volume ratio of said first dopant to said luminescent layer.

3. The organic EL device as recited in claim 2, wherein the volume ratio of said first dopant to said luminescent layer is in the range from 0.04 % to 0.01 %.

4. The organic EL device as recited in claim 3, wherein the volume ratio of said first dopant to said luminescent layer is preferably 0.025 %.

5. The organic EL device as recited in claim 1, wherein the luminescence intensity of said third light is proportional to the thickness of said luminescent layer and the luminescence intensity of said second light is in inverse proportion to the thickness of said luminescent layer.

6. The organic EL device as recited in claim 1, wherein the thickness of said luminescent layer is in the range from 20Å to 150Å.

7. The organic EL device as recited in claim 1, wherein said first light is red light, said second light is green light, and said third light is green light.

8. The organic EL device as recited in claim 1, wherein said first dopant is composed of one of luminescent medium, phosphorescent medium and the combination thereof.

9. The organic EL device as recited in claim 8, wherein said luminescent medium is composed of one of DCM₂, DCM₁, DCJTb, coumarin 545T, perylene and the combination thereof.

10. The organic EL device as recited in claim 1, wherein said second dopant is composed of one of luminescent medium, phosphorescent medium and the combination thereof.

11. The organic EL device as recited in claim 10, wherein said luminescent medium is composed of C₆.

12. The organic EL device as recited in claim 10, wherein the volume ratio of said second dopant to said electron transporting layer is in the range from 0.05 % to 0.2 %.

13. The organic EL device as recited in claim 1, wherein said luminescent layer is composed of one of DPVBi, Balq, PVK, Zn(ODZ)₂ and the composition thereof.

14. The organic EL device as recited in claim 1, further comprising a hole injection layer interposed between said anode and said hole transporting layer.

15. The organic EL device as recited in claim 1, further comprising a second electron transporting layer serving as a cap layer interposed between said electron transporting layer and said cathode.

16. The organic EL device as recited in claim 1, further comprising an electron injection layer interposed between said electron transporting layer

and said cathode.

17. The organic EL device as recited in claim 1, further comprising a transparent substrate, composed of one of plastic and glass, formed under said anode.

5 18. A method for fabricating a white light emitting organic electroluminescent (EL) device, comprising the steps of:

providing a substrate;

forming, in sequence from substrate up, an anode, at least one hole transporting layer, at least one luminescent layer, at least one electron
10 transporting layer, and a cathode;

doping a first dopant into said luminescent layer; and

doping a second dopant into said electron transporting layer;

wherein a first light is emitted by said first dopant, a second light is emitted by said second dopant, and a third light is emitted by said
15 luminescent layer when the device is applied with a bias voltage.

19. The method as recited in claim 18, wherein said luminescent layer is DPVBi for emitting blue light, said first dopant is DCM₂ for emitting red light, said second dopant is C₆ for emitting green light.

20 20. The method as recited in claim 19, wherein the luminescence intensity of green light and blue light depends on the ratio of DCM₂ to DPVBi.

21. The method as recited in claim 18, wherein the luminescence intensity of said second light and said third light depends on the thickness of said luminescent layer, wherein the luminescence intensity of said
25 second light gets weaker and the luminescence intensity of said third light gets stronger as the thickness of said luminescent layer increases.